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June 2, 2003

Cruise Report
F/V *Pacific Explorer* Cruise 200201
June 10 - July 9, 2002

Project Title: Atka mackerel tag and release Seguam and Tanaga Passes, Aleutian Islands Alaska

SCIENTIFIC PURPOSE

The objective of our on-going tag release-recovery studies is to determine the efficacy of trawl exclusion zones as a management tool to maintain prey abundance/availability for Steller sea lions at local scales. Trawl exclusion zones were established around sea lion rookeries as a precautionary measure to protect critical sea lion habitat, including local populations of prey such as Atka mackerel. Localized fishing may affect Atka mackerel abundance and distribution near sea lion rookeries. Tagging experiments are being used to estimate abundance and movement between areas open and closed to the Atka mackerel fishery. A feasibility study was conducted in 1999 at Seguam Pass. In summer 2000, approximately 8000 tagged Atka mackerel were released in Seguam Pass, and in 2001 approximately 1000 were released during a truncated cruise. Recovery of tagged fish is supplied by the fishery in the open areas outside the trawl exclusion zone. Recoveries in the closed areas are provided by chartered recovery cruises. The purpose of F/V Pacific Explorer Cruise 200102 was to tag and release Atka mackerel inside and outside the trawl exclusion zones in Seguam and Tanaga Passes. Approximately 21,000 fish were tagged in the Seguam Pass area, and approximately 14,520 were tagged near Tanaga Pass.

ITINERARY AND ACTIVITIES

LEG I

June	11	Dutch Harbor, AK; unload gear, set up tanks
	11-12	In transit to Seguam Pass
	12	Seguam Pass, tagging in stratum 4 (see Figure 1)
	13	Gale; anchor NE of Saddleridge Point
	14	Seguam Pass; tagging in stratum 1, 2
	15	Seguam Pass; tagging in stratum 2
	16	Seguam Pass; tagging in stratum 1
	17	Seguam Pass; tagging in stratum 1, 2
	18	Seguam Pass; tagging in stratum 2, 3
	19	Seguam Pass; tagging in stratum 4
	20	Seguam Pass; tagging in stratum 3, 4
	21	Seguam Pass; tagging in stratum 3
	22	In transit to Tanaga Pass; anchor in Cable Bay
	23	Tanaga Pass; Tagging in stratum 1, 2 (see Figure 2)
	23-24	In transit to Adak Island, AK; change personnel (McDermott leaves, Logerwell arrives)

LEG II

June	25-26	In transit to Tanaga Pass
	26	Tanaga Pass; tagging in stratum 3
	27	Tanaga Pass; tagging in stratum 3, 2
	28	Tanaga Pass; tagging in stratum 2, 1
	29	Tanaga Pass; tagging in stratum 1
	30	Tanaga Pass; tagging in stratum 4; begin transit to Seguam Pass
July	2	Arrive Adak Island (Logerwell fly home for family medical emergency)
	3	Seguam; tagging in stratum 1, 2 (Neidetcher acting FPC)
	4	Seguam; tagging in stratum 4, 2
	5	Seguam; tagging in stratum 4, 3
	6	Seguam; tagging in stratum 3, 4
	6-7	In transit to Dutch Harbor
	7	Anchor outside Dutch Harbor; clean tanks, nets and gear
	8	Arrive Dutch Harbor
	8-9	Unload tanks, nets and gear

RESULTS

Tagged Atka mackerel. Tables 1 and 2 show the number of Atka mackerel tagged and released in each stratum in Seguam and Tanaga Passes. In addition to the releases shown in the tables, 2,000 fish were tagged and released as part of a preliminary "homing experiment" in Seguam Pass. 1,000 fish were caught in stratum 1 and released in stratum 4, another 1,000 were caught in stratum 4 and released in stratum 1.

Table 1. Distribution of tagged fish in Seguam Pass

Strata	Approx. # of tagged Atka mackerel
1	7,000
2	7,000
3	7,000
4	7,000
Total	21,000

Table 2. Distribution of tagged fish in Tanaga Pass

Strata	Approx. # of tagged Atka mackerel
1	4,000
2	4,000
3	4,520
4	2,000
Total	14,520

Archival tag deployments. Tables 3 and 4 show the distribution of fish tagged with archival tags, which record depth and time continuously.

Table 3. Distribution of Atka mackerel released with archival tags in Seguam Pass area.

Strata	# archival tags
1	30
2	30
4	140
Total	200

Table 4. Distribution of archival tags in Tanaga Pass area.

Strata	# archival tags
1	60
2	60
3	60
4	20
Total	200

Biological samples Otoliths, gonads and stomachs were collected from 10 males and 10 females from every successful haul. Samples were taken from a total of 210 fish of each sex. In addition to these samples, approximately 30 whole fish of each sex were frozen for future proximate analysis (fat, protein, water, and ash content).

Length frequency In order to examine any bias in the length selection of the tagged fish, it is necessary to obtain length frequencies from the total catch. Approximately 100 fish (not tagged) were sacrificed from each successful haul to determine sex and length.

Mortality study A random selection of tagged fish were placed into tanks to assess mortality rate following capture, handling and tagging. Experiments were conducted over two different duration, 48 hours and 4 days (96 hours). 16 experiments were conducted over the course of the cruise. Of the 315 fish participating in the experiments, a total of 13 died, for a mortality rate of 4%.

Physical oceanographic measurements Continuous temperature and salinity data were collected with a Seabird SBE45 plumbed to receive water from the same source as the tanks. Temperature-depth data were also collected with a MBT mounted on the net.

SCIENTIFIC STAFF

Leg I

Name	Sex/Natl.	Position
1. Susanne McDermott	F/USA	Field Party Chief
2. Sandi Neidetcher	F/USA	Deck Boss
3. Kim Rand	F/USA	Scientist
4. Dan Cooper	M/USA	Scientist
5. Ruth Christiansen	F/USA	Student Intern

Leg II

Name	Sex/Natl.	Position
1. Elizabeth Logerwell	F/USA	Field Party Chief
2. Sandi Neidetcher	F/USA	Deck Boss/Field Party Chief
3. Kim Rand	F/USA	Scientist
4. Dan Cooper	M/USA	Scientist
5. Ruth Christiansen	F/USA	Student Intern

For further information, contact Dr. Richard Marasco, Director, Resource Ecology and Fisheries Management Division, Alaska Fisheries Science Center, National Marine Fisheries Service, 7600 Sand Point Way NE, Building 4, Seattle, WA 98115-6349, Telephone: (206)526-4172

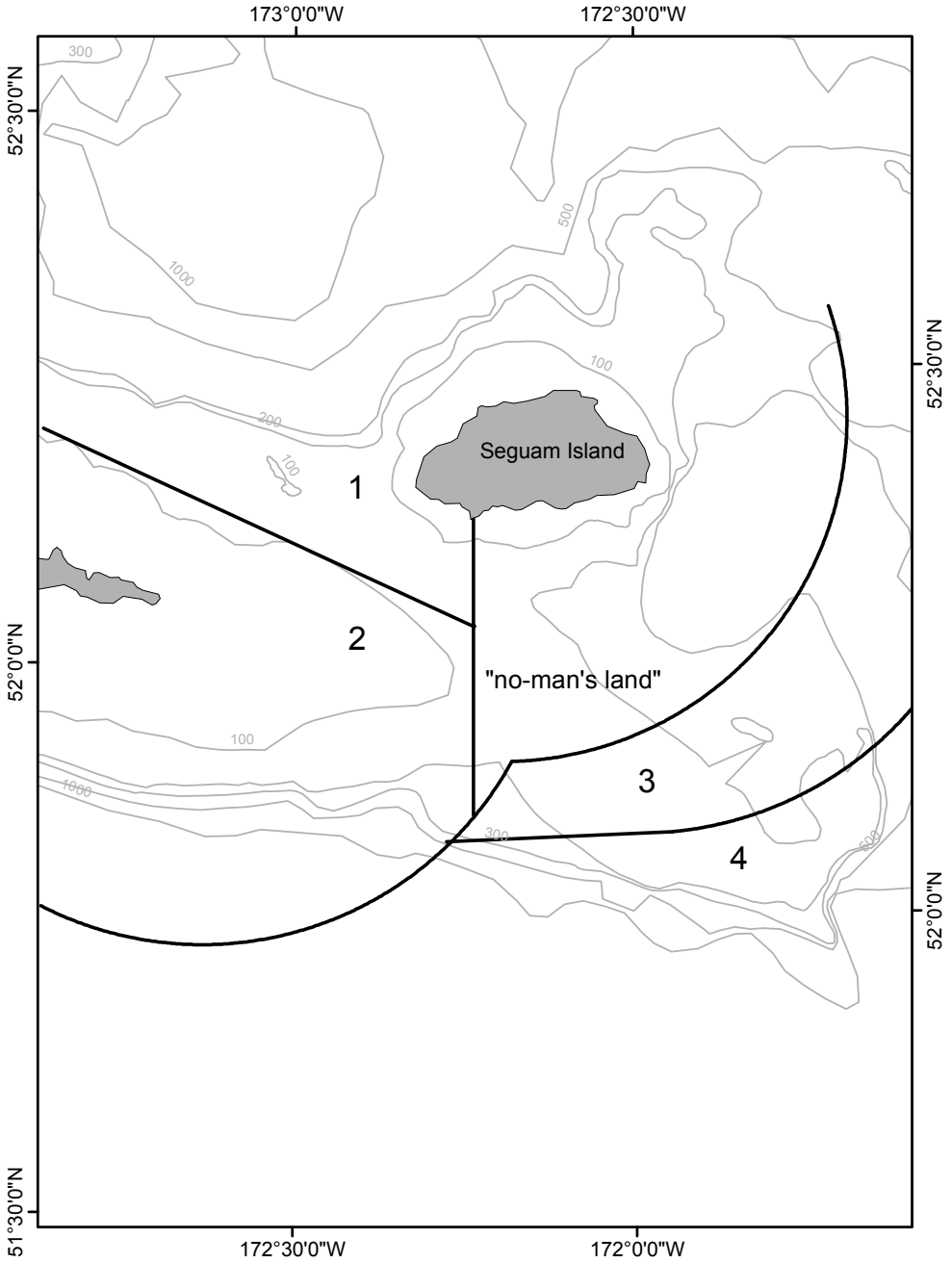

Figure 1. Strata in the Seguam Pass area for the 2002 tag release cruise.

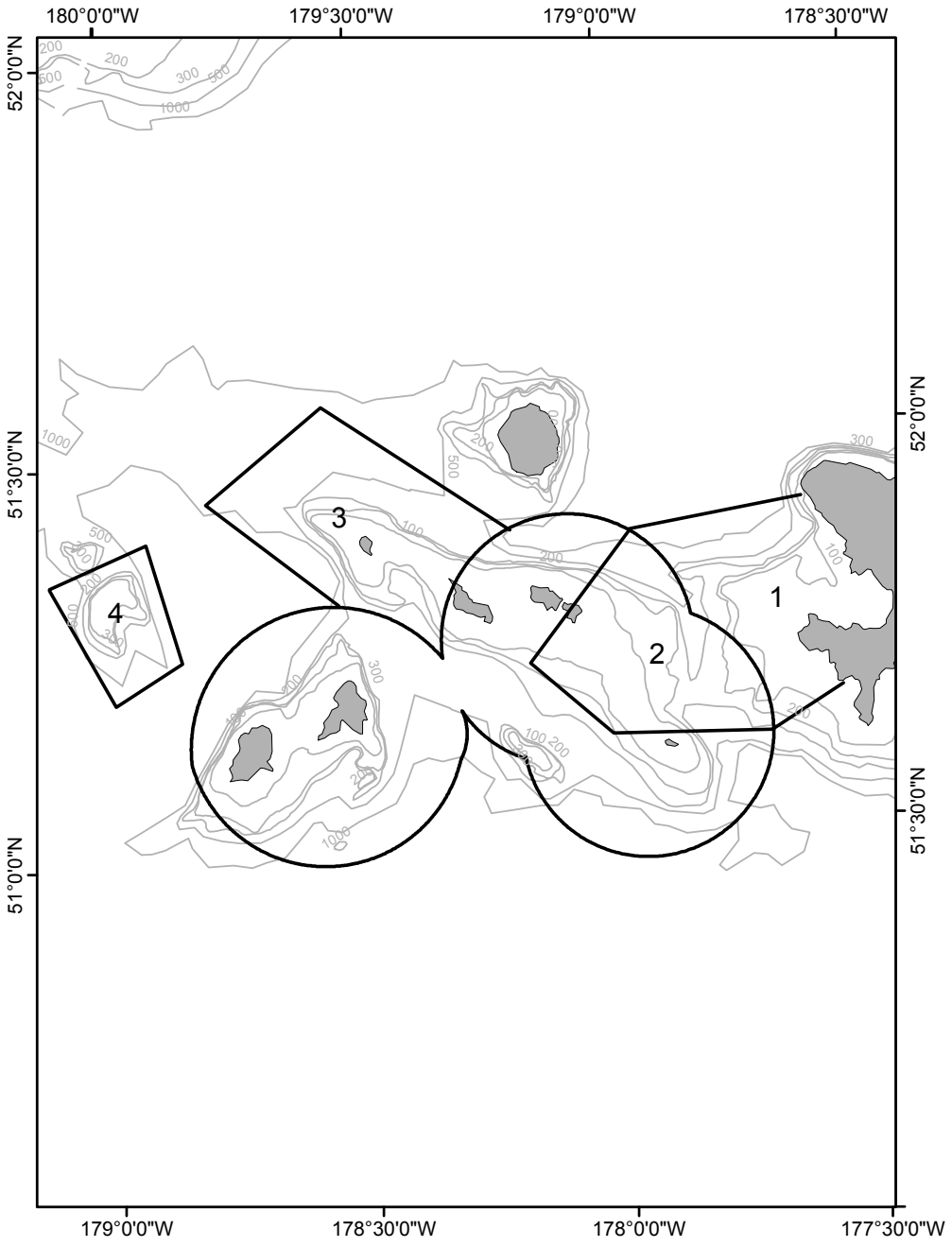

Figure 2. Strata in the Tanaga Pass area for the 2002 tag release cruise.